

**Change Table. 1: This table identifies modifications to existing ESN RbR Release B requirements in the L4 class as identified in the 122096 baseline version of the RTM database.**

RBR_id	object key	segment	req_type	s_verif_meth	s_verif_stat	a_verif_method	a_verif_stat	req_category	text	clarification text	interpretation text
ESN-0003#B	3950	CSMS	functional	analysis	un-verified	analysis	<u>un-verified</u>	mission essential	The ESN shall enable researchers on existing networks (TCP/IP and GOSIP) to gain access to data and ECS services in a transparent manner to the underlying differences between the networks.		B: ASTER GDS interfaces to EDC DAAC only. <u>All researchers gain access to data and ECS via NSI.</u>
ESN-0006#B	3953	CSMS	functional	analysis	un-verified	analysis	<u>un-verified</u>	mission essential	ESN shall interface with NSI to reach all external non-ECS network-attached facilities and science users.		<u>B: Science users, SCFs. ESN is considered to be ECS DAAC networks.</u>
ESN-0010#B	3955	CSMS	security	test	un-verified	test	<u>un-verified</u>	mission essential	ESN shall provide the following standard services: a. Data Transfer and Management Services b. Electronic Messaging Service c. Remote Terminal Service d. Process to Process Communication Service e. Directory and User Access Control Service f. Network Management Service g. Network Security and Access Control Service h. Internetwork Interface Services i. Bulletin Board Service		
ESN-0070#B	6324	CSMS	functional	test	un-verified	test	un-verified	mission critical	The ESN shall support the intrasite elements data flow requirements identified in this specification.		<u>ESN supports non-DAAC component services or capabilities including GSFC, SMC, and EOC (FOS) connectivity. At GSFC the ESN intrasite</u>

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											<u>communications include the SMC and EOC (FOS) for management data exchanges.</u>
ESN-0080#B	6333	CSMS	functional	test	un-verified	test	un-verified	mission essential	The ESN shall interface with EBnet for inter-site data transmission between ECS DAACs.	At GSFC the ESN intrasite communications include the SMC and EOC (FOS) for management data exchanges.	<del>TRMM, AM-1</del> ESN is considered to be ECS DAAC networks.
ESN-0240#B	3960	CSMS	functional	analysis	un-verified	analysis	<u>un-verified</u>	mission essential	The ESN shall be extensible in its design to provide capability for growth and enhancement.		ESN is considered to be ECS DAAC networks.
ESN-0280#B	3962	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission critical	The ESN shall provide file transfer and management service and as a minimum shall include the capability to transfer the following data types: a. Unstructured Text b. Binary Unstructured c. Binary Sequential d. Sequential Text		
ESN-0290#B	3963	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission critical	The file transfer and management service shall be available in interactive and non-interactive services.		
ESN-0300#B	3964	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission critical	The file transfer and management non-interactive services shall be able to be scheduled.		
ESN-0340#B	3965	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission essential	The ESN shall interoperate and exchange messages and data with external SMTP and X.400 mail systems.		

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ESN-0345#B	3966	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission essential	The ESN shall be capable of transparently transmitting Multi-purpose Internet Mail Extensions (MIME) messages.		
ESN-0350#B	3967	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission essential	The Electronic Messaging Service, shall be capable of exchanging binary data.		
ESN-0370#B	3968	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission essential	The ESN shall provide interactive virtual terminal services.		
ESN-0450#B	3969	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission critical	The ESN shall provide process-to-process communication service.		
ESN-0490#B	3970	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission critical	The ESN shall provide a name-to-attribute mapping Directory Service at a minimum.		
ESN-0510#B	3971	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission critical	The directory function shall be able to respond to requests for information concerning named objects, either physical or logical, so as to support communications with those objects.		
ESN-0590#B	3972	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission critical	The ESN Directory Service shall be protected by access control capabilities.		
ESN-0600#B	3973	CSMS	security	test	un-verified	test	<u>un-verified</u>	mission critical	The ESN Directory service shall include services and supporting mechanisms to authenticate the credentials of a user for the purpose of granting access rights and authorizing requested operations.		
ESN-0610#B	3974	CSMS	security	test	un-verified	test	<u>un-verified</u>	mission critical	The ESN shall include multiple Directory Service Agents (DSAs) which shall be collectively		

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									responsible for holding or retrieving all directory information which is needed by ECS.		
ESN-0620#B	3975	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission critical	The ESN shall include a network management function to monitor and control the ESN.		
ESN-0640#B	3976	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission critical	The ESN shall include management functions at each ECS element, equipment or gateway within the ESN.		
ESN-0650#B	3977	CSMS	security	test	un-verified	test	<u>un-verified</u>	mission critical	The ESN shall perform the following network management functions for each protocol stack implemented in any ECS element, and each communications facility: a. Network Configuration Management b. Network Fault Management c. Network Performance Management d. Network Security Management		
ESN-0690#B	3978	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission critical	The ESN shall be capable of reconfiguration transparent to network users.		
ESN-0740#B	3979	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission essential	The ESN network management service shall retrieve performance/fault data about ESN protocol stacks and equipment.		
ESN-0750#B	3980	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission essential	The ESN shall provide statistical processing capabilities to allow extraction and tabulation of network performance data.		
ESN-0760#B	3981	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission essential	The ESN report generation function shall provide, on an interactive		

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									and scheduled basis, accounting, network configuration, fault and performance management information.		
ESN-0780#B	3984	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission essential	The network elements including the Internet interfaces, shall have the capability to report, periodically and on an interactive basis , network statistics to the ESN network management function, including the following information: a. Network round trip delay b. Network reset and restart indications c. Outages and CRC errors d. Performance statistics		
ESN-0790#B	3985	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission essential	The ESN shall include the following configuration management functions at a minimum: a. collect information describing the state of the network subsystem and its communications resources, b. exercise control over the configuration, parameters, and resources of the subsystem, and over the information collected, c. store the configuration information collected, and d. display the configuration information		
ESN-0810#B	3987	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission essential	ESN shall provide the following fault management functions at a minimum: a. detect the occurrence of faults, b. control the collection of fault information, and c. diagnose the probable cause of a detected fault		
ESN-0815#B	3988	CSMS	functional	analysis	un-verified	analysis	<u>un-verified</u>	mission essential	Network simulation and traffic		

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									modeling capability shall be provided to troubleshoot network problems and to use in network planning.		
ESN-0840#B	3990	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission critical	The ESN shall have error reporting, event logging and generation of alerts.		
ESN-0900#B	3991	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission critical	Errors and events to be detected shall include at least: a. communications software version or configuration errors b. communications hardware errors c. protocol errors d. performance degradation conditions e. telecommunications errors and failures		
ESN-0920#B	3993	CSMS	functional	inspection	un-verified	inspection	<u>un-verified</u>	mission critical	The ESN shall provide a set of utilities to perform diagnostic and testing functions for purposes of fault isolation.		
ESN-1010#B	3995	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission essential	The ESN shall provide, for selective use as a debugging aid, the capability to perform packet tracing of its supported protocols.		
ESN-1030#B	3996	CSMS	functional	demo	un-verified	demo	<u>un-verified</u>	mission critical	The ESN shall perform periodic testing of alternate communication capabilities to verify that they are operational.		
ESN-1060#B	3997	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission essential	The ESN performance management function shall provide the capability to evaluate the performance of ESN resources and interconnection activities.		
ESN-	3998	CSMS	functional	analysis	un-	analysis	<u>un-</u>	mission			

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1065#B					verified		<u>verified</u>	fulfillment	The ESN performance management function shall include trend analysis for prediction of loading and bottlenecks/delays.		
ESN-1070#B	3999	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission essential	The ESN shall provide the capability to perform the following functions, at a minimum: a. generate/collect network statistics b. control collection/generation of network statistics c. store system statistics and statistical histories d. display the system statistics e. track end-to-end transaction performance		
ESN-1090#B	4000	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission essential	The ESN shall provide the capability to control the communications performance parameters of the network.		
ESN-1140#B	4001	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission critical	The ESN shall provide protocol translation, termination, bridging and routing.		
ESN-1170#B	4002	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission critical	The ESN shall provide necessary translation within supported file transfer and e-mail services.		
ESN-1180#B	8242	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission critical	The ESN shall interoperate with NSI to provide user access to ECS.		
ESN-1181#B	4004	CSMS	functional	demo	un-verified	demo	<u>un-verified</u>	mission essential	The ESN shall provide an ECS Bulletin Board capability.		
ESN-1206#B	4005	CSMS	functional	test	un-verified	test	<u>un-verified</u>	mission critical	The ESN capacity and performance shall be consistent with the specified capacity and performance requirements of the ECS functions.		
ESN-	4006	CSMS	functional	analysis	un-	analysis	<u>un-</u>	mission			

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1207#B					verified		<u>verified</u>	critical	The ESN capacity and performance shall be capable of expansion to be consistent with the specified capacity and performance growth requirements of the ECS elements and functions.		
ESN-1340#B	4009	CSMS	functional	analysis	un-verified	analysis	<u>un-verified</u>	mission critical	The ESN shall provide support for TCP/IP communications protocols and services to external interfaces as required by the IRDs.		
ESN-1350#B	4011	CSMS	security	analysis	un-verified	analysis	<u>un-verified</u>	mission critical	The ESN LANs shall provide physical devices and the corresponding medium access control (MAC) protocol compatible with ISO and ANSI standards.		<u>This requirement applies to any ECS-supplied LAN.</u>
ESN-1360#B	4012	CSMS	security	test	un-verified	test	<u>un-verified</u>	mission critical	The ESN shall control access of processes and users through an authentication and authorization service that meets GNMP standards.		
ESN-1365#B	4014	CSMS	security	test	un-verified	test	<u>un-verified</u>	mission critical	The ESN shall isolate FOS with secure interfaces.		
ESN-1367#B	4015	CSMS	security	test	un-verified	test	<u>un-verified</u>	mission critical	IST users not within FOS facilities shall communicate with secure interfaces only with the use of a data integrity service.		
ESN-1380#B	4016	CSMS	security	test	un-verified	test	<u>un-verified</u>	mission critical	The ESN shall provide countermeasures for the following security threats related to data communications: a. modification of data (i.e., manipulation) while in transit over the network b. disclosure of authentication information c. degradation in network or processing resource performance		



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									through denial of service attack d. Impersonation of authentication credentials or authorization privileges.		
ESN-1400#B	4017	CSMS	security	test	un-verified	test	<u>un-verified</u>	mission critical	The following security functions and services, at a minimum, shall be provided: a. authentication b. access (authorization) control c. data integrity d. data confidentiality		
ESN-1430#B	4019	CSMS	security	test	un-verified	test	<u>un-verified</u>	mission critical	The ESN shall provide the following security event functions: a. Event detection b. Event reporting c. Event logging		